

Recovery Plan Action Status

Plan Name: Recovery Plan for the Karner Blue Butterfly

Plan Status: Final

Plan Date: 19-Sep-03

Lead Agency: USFWS

Lead Office: Green Bay Ecological Services Field Office

(920)

866-1717)

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Karner blue butterfly (Lycaeides melissa samuelis)	1	1.11	Monitor population trends, habitat and distribution in New Hampshire	Ongoing Current	FY 2000 - FY 2004		New Hampshire Department of Fish and Game	Management: Population Monitoring	Internal Field Assistance	Two flights monitored in Concord NH. The 2008 mark/recapture survey done by the NH Fish and Game Dept. showed an increase in the wild Karner blue population first flight and increase in habitat use second flight. The population was reported as increasing in 2010.
Karner blue butterfly (Lycaeides melissa samuelis)	1	1.12	Survey for new and monitor existing subpopulations in Minnesota.	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Minnesota Department of Natural Resources	Management: Population Monitoring	Internal Field Assistance	Monitor existing pops and restored habitats at Whitewater WMA. Trend monitoring is generally done annually. In 2008, a more extensive survey indicated Kbbs present in only one valley - Cuthrell Valley - with an overall population estimated to be about 80-160 2nd brood butterflies (James Bess, Otis Enterprises, 2009 Report). At least 5 females were seen in Cuthrell Valley in 2009; no surveys were conducted in 2010.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.13	Monitor population trends, habitat and distribution in Michigan	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Forest Service, Michigan Department of Natural Resources, Michigan Natural Features Inventory	Management: Population Monitoring	Internal Field Assistance	Survey in Ionia RU-P1; Survey in Muskegon RU-P2. Surveys on-going at Kbb recovery sites on MI DNR lands and Huron-Manistee NF lands, as well as other sites.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.14	Monitor population trends, habitat and distribution in New York	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission	Management: Population Monitoring	Internal Field Assistance	Monitoring is occurring on all NY KBB sites. In 2010, the Albany Pine Bush population was determined to be about 400 Kbb in 10 fragmented subpopulations. Most of the NY sites have low Kbb numbers and none are near recovery goals.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.15	Monitor population trends, habitat and distribution in Indiana	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, Indiana Dunes National Lakeshore	Management: Population Monitoring	Internal Field Assistance	Populations are being monitored annually at Indiana Dunes National Park and periodically at a subset of the West Gary sites.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.16	Monitor population trends, habitat and distribution in Wisconsin	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, National Wildlife Refuges (Necedah or Great Bay NWR), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Wisconsin Department of Natural Resources	Management: Population Monitoring	Contract, Internal Field Assistance	Search for recovery sites in the Yellow River Focus Area of Glacial Lake Wisconsin RU-P3. Necedah NWR occasionally conducts surveys in this area. Kbb recovery populations are monitored on state lands and at Fort McCoy and Necedah NWR. In 2010, the annual recovery criteria for Kbb population numbers (3,000 for VP and 6,000 for LVP) were met (or likely met) at 5 sites in WI (Fort McCoy, Necedah NWR and 3 state properties).
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.21	Continue/start management activities for New Hampshire	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Federal Aviation Administration, U.S. Fish and Wildlife Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), City of Concord, New Hampshire, New Hampshire Department of Fish and Game, Private landowners	Management: Habitat Maintenance and Manipulation	Internal Field Assistance	Concord sites. A reintroduction is on-going at Concord which includes habitat management activities.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.22	Continue/start management activities for Minnesota	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Minnesota Department of Natural Resources	Management: Habitat Maintenance and Manipulation	Internal Field Assistance	Management work at Whitewater WMA is on-going. In 2010 prescribed burns were conducted near the Kbb site to enhance habitat.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.23	Continue/start management activities for New York	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission, Private landowners, Wilton Wildlife Preserve and Park	Management: Habitat Maintenance and Manipulation	Contract, Internal Field Assistance, Internal Technical Assistance	Habitat management and assessment work on-going in the Albany Pine Bush, Saratoga Sandplains and Saratoga West by the NYDEC and TNC.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.24	Continue/start management activities for Michigan	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, U.S. Forest Service, Michigan Department of Natural Resources, Minnesota Department of Natural Resources, Michigan Natural Features Inventory	Management: Habitat Maintenance and Manipulation	Contract, Internal Field Assistance	Habitat management, enhancement and protection activities are on-going by the MI DNR and Huron-Manistee NF on recovery properties.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.25	Continue/start management activities for Indiana	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, Indiana Dunes National Lakeshore	Management: Habitat Maintenance and Manipulation	Internal Field Assistance	Most habitats are fire suppressed and require brush and/or tree removal. Habitat management is on-going at Indiana Dunes NP and at the West Gary sites. Restoration work at West Gary is supported by USFWS S6 funds through 2010.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.26	Continue/start management activities for Wisconsin	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, National Wildlife Refuges (Necedah or Great Bay NWR), Department of Agriculture, Trade and Consumer Protection (Wisconsin), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Local Governments, Private landowners, Wisconsin Department of Natural Resources, Natural Resources Conservation Service	Management: Habitat Maintenance and Manipulation	Contract, Internal Field Assistance	Federal, state and private property. Necedah NWR has an on-going savanna restoration and management program that benefits the KBB and rare savanna species. Fort McCoy has an active KBB recovery program. The WI DNR manages several Karner sites on state recovery properties. The FWS's Partners program works with private landowners to restore habitat for the butterfly. The 41 partners (2010) to the WI Statewide KBB HCP conduct management per conservation measures to conserve Kbb.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.311	Develop protection and management plans for Minnesota	Ongoing Current	FY 2006		U.S. Fish and Wildlife Service, Ecological Services Division, Minnesota Department of Natural Resources	Management: Planning	Internal Field Assistance	Incorporate recovery guidance into Whitewater WMA Plan - planned to start in 2010 or 2011.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.312	Develop protection and management plans for New York	Complete	FY 2006		New York State Department of Environmental Conservation, Albany Pine Bush Preserve Commission	Management: Planning	Internal Administrative	Saratoga West-P2. Initial Plan developed for Saratoga Metapopulation (may need revising through time). Kbb Recovery Plan for the Albany Pine Bush Metapopulation Recovery Unit completed March 2010 by APBPC and NYSDEC.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.313	Develop protection and management plans for Indiana	Complete	FY 2006	FY 2007	U.S. Fish and Wildlife Service, Ecological Services Division, The Nature Conservancy, Indiana Dunes National Lakeshore, Indiana Department of Natural Resources	Management: Planning	Internal Administrative	West Gary and Indiana Dunes National Lakeshore. IDNL KBB protection via formal S7 consultation with NPS; West Gary plan being implemented via a Programmatic Safe Harbor Agreement with TNC.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.314	Develop protection and management plans for Michigan	Ongoing Current	FY 2006		U.S. Forest Service	Management: Planning	Internal Field Assistance	Ionia and Newagov RUs-P2. An HCP has been completed for one utility company in MI and the MI KBB Statewide HCP is nearing completion. In 2004 Huron-Manistee NF completed a draft management strategy for the Kbb.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.315	Develop protection and management plans for Wisconsin	Ongoing Current	FY 2007		U.S. Fish and Wildlife Service, Ecological Services Division, National Wildlife Refuges (Necedah or Great Bay NWR), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Wisconsin Department of Natural Resources	Management: Planning	Internal Field Assistance	Necedah NWR Kbb plan complete via the March 2002 revised Biological Opinion (BO) for the Refuge's Comprehensive Conservation Plan (CCP). Fort McCoy Plan complete via 1994 BO (and subsequent amendments), and the Fort's Endangered Species Management Plan (2006) that is part of the Fort's Integrated Natural Resources Management Plan (2005-2010). During 2007 Wisconsin DNR started planning efforts to develop management and protection plans for several recovery sites on state properties in WI.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.321.1	Implement the management plan in New Hampshire	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Federal Aviation Administration, U.S. Fish and Wildlife Service, The Nature Conservancy, New Hampshire Department of Fish and Game	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	Management and monitoring being conducted at the Concord reintroduction site.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	1.321.2	Implement the management plan in Minnesota	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission, Local Governments, Private landowners, Wilton Wildlife Preserve and Park	Work type not yet selected	Internal Technical Assistance	KBB trend monitoring is ongoing at Whitewater WMA
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.321.3	Implement the management plan in New York	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Local Governments, Private landowners, Wilton Wildlife Preserve and Park	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	Land acquisition needed. Management and monitoring ongoing annually.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	1.321.5	Implement the management plan in Indiana	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, National Park Service, The Nature Conservancy, Indiana Dunes National Lakeshore, Indiana Department of Natural Resources	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	Habitat management ongoing in West Gary per the KBB Safe Harbor program and at Indiana Dunes by the NPS.

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Karner blue butterfly (Lycaeides melissa samuelis)	2	1.321.6	Implement the management plan in Michigan	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, U.S. Forest Service, Michigan Department of Natural Resources, Michigan Natural Features Inventory, Private landowners	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	Habitat management is ongoing in all 4 MI Recovery Units on state properties and on the Hruon Manistee NF.
Karner blue butterfly (Lycaeides melissa samuelis)	2	1.322.1	Implement long term land protection strategies in New Hampshire	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Federal Aviation Administration, U.S. Fish and Wildlife Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), City of Concord, New Hampshire, New Hampshire Department of Fish and Game, Private landowners	Acquisition: General	Internal Field Assistance	NH F&G and the FWS continue work to preserve habitat and create partnerships in the Concord Pine Barrens.
Karner blue butterfly (Lycaeides melissa samuelis)	2	1.322.3	Implement long term land protection strategies in Indiana	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, Indiana Dunes National Lakeshore, Private landowners	Acquisition: General	Internal Field Assistance	Habitat protection in place at some West Gary sites; protection from unplanned fires needed. Sites at Indiana Dunes NL protected.
Karner blue butterfly (Lycaeides melissa samuelis)	2	1.322.4	Implement long term land protection strategies in Michigan	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Forest Service, The Nature Conservancy	Work type not yet selected	Internal Field Assistance	MI DNR and Huron-Manistee NF are implementing protective measures e.g. restricting ORV use of KBB habitat and closing forest trails/roads.

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Karner blue butterfly (Lycaeides melissa samuelis)	3	1.322.5	Implement long term land protection strategies in Wisconsin	Ongoing Current	FY 2007		U.S. Fish and Wildlife Service, Private landowners, Wisconsin Department of Natural Resources	Acquisition: Easement	Internal Field Assistance	A conservation easement is being purchased by WDNR on the Sawyer and Welch properties which will further recovery of the Welch/Emmons/Hartman Creek KBB metapopulation (WI). A 320 land purchase was made in 2007 to promote recovery efforts at Crex Meadows SWA (WI). Both actions are supported with USFWS Non-Traditional S6 HCP Land Acquisition Grant monies. Land for KBB recovery has also been purchased in NY via a S6 grant.
Karner blue butterfly (Lycaeides melissa samuelis)	3	1.322.6	Implement long term land protection strategies in Minnesota	Ongoing Current	FY 2000 - FY 2004		Minnesota Department of Natural Resources	Work type not yet selected	Labor type not yet selected	Land is under state protection at Whitewater WMA.
Karner blue butterfly (Lycaeides melissa samuelis)	2	1.3221.4	Implement the management plan in Wisconsin	Ongoing Current	FY 2000 - FY 2004		National Wildlife Refuges (Necedah or Great Bay NWR), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Private landowners, Wisconsin Department of Natural Resources	Work type not yet selected	Labor type not yet selected	Periodic management of Karner habitat is on-going in all WI recovery areas. Sites w/ Kbb recovery implementation plans (Necedah, Fort McCoy) are implementing those plans. HCP partners (41 in 2010) are implementing the KBB HCP conservation program on their lands.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.323.1	Implement the monitoring strategies in New Hampshire	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, New Hampshire Department of Fish and Game	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	KBB and habitat monitoring on-going as part of the reintroduction program at Concord.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.323.2	Implement the monitoring strategies in Minnesota	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Minnesota Department of Natural Resources	Management: General	Contract, Internal Field Assistance	KBB populations are generally monitored annually and habitat assessed periodically. In 2008 James Bess (Otis Enterprises, 2009) assessed Kbb and habitat at Whitewater and recommended expansion of the habitat restoration and management activities. Bess found that the one remaining Kbb population at Cuthrell Valley (2008) numbered from about 80-160 butterflies. In 2010 no Kbb monitoring occurred at the one remaining Kbb site - Cuthrell Valley.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.323.3	Implement the monitoring strategies in New York	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission, Private landowners, Wilton Wildlife Preserve and Park	Work type not yet selected	Contract, Internal Field Assistance	KBB and habitat monitoring is on-going in NY.

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Karner blue butterfly (Lycaeides melissa samuelis)	3	1.323.4	Implement the monitoring strategies in Indiana	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, Indiana Dunes National Lakeshore	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	KBB and habitat monitoring is on-going at Indian Dunes NP and West Gary. Some of the West Gary work is supported by S6 funding through 2010.
Karner blue butterfly (Lycaeides melissa samuelis)	3	1.323.5	Implement the monitoring strategies in Michigan	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Forest Service, Michigan Department of Natural Resources, Michigan Natural Features Inventory	Management: General	Internal Field Assistance	Population and habitat assessment work is on-going at MI KBB recovery sites on state lands and on Huron-Manistee NF lands.
Karner blue butterfly (Lycaeides melissa samuelis)	3	1.323.6	Implement the monitoring strategies in Wisconsin	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, National Wildlife Refuges (Necedah or Great Bay NWR), Private landowners	Management: Habitat Maintenance and Manipulation, Management: Population Monitoring	Internal Field Assistance	WDNR started KBB recovery monitoring of KBB sites on state properties in 2008; recovery monitoring has been coordinated with the WI KBB Statewide HCP. Kbb population monitoring as well as habitat assessment work is on-going at the state properties, Fort McCoy and periodically at Necedah NWR.
Karner blue butterfly (Lycaeides melissa samuelis)	3	1.411	Review Federal, state and private activities section 7 Federal responsibilities under the Act	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Federal Aviation Administration, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, National Wildlife Refuges (Necedah or Great Bay NWR), Natural Resources Conservation Service	Other: Regulations	Internal Field Assistance	The FWS annual engages in S7 informal and/or formal consultations with KBBs in several states within the species range.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.412	Review Federal, state and private activities section 10(a)(1)(A) scientific permits under the Act.	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, Michigan Department of Natural Resources, The Nature Conservancy, Albany Pine Bush Preserve Commission, Minnesota Department of Natural Resources, New Hampshire Department of Fish and Game, Ohio Department of Natural Resources, Toledo Zoo, Detroit Zoo	Other: Regulations	Internal Field Assistance	The FWS reviews S10(a)(1) permit applications for KBBs on an annual basis from one or more states within the range of KBBs and from researchers. Permits for programmatic Safe Harbors have been issued to TNC in IN and NY.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.413	Review Federal, state and private activities section 10(a)(1)(B) incidental take permits per the Act	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, Wisconsin Department of Natural Resources	Other: Regulations	Internal Technical Assistance	Four ITPs have been issued for HCPs developed for the KBB (WI DNR and 25 Partners involved in the WI KBB Statewide HCP in 1999, MI Electric Transmission Co. in 2005, and in 2006 ITPs were issued for Indiana-American Water Co. and Northern Indiana Public Service Co.). The MI KBB Statewide HCP is currently under development.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.42	Develop standardized conditions for scientific permits	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New Hampshire Department of Fish and Game	Other: Regulations	Internal Field Assistance	The Intra-Service S7 BO for KBB S10 Permits and Grants completed in 2005 includes std. permit conditions. A Propagation Handbook for the Kbb is anticipated to be completed in 2010 which will provide standardized guidance of captive rearing techniques.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.43	Explore mechanisms to streamline Federal permit process for private landowners	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service	Other: Regulations	Internal Field Assistance	The WI KBB Statewide HCP contains that streamline regulation pertaining to private landowners and a programmatic section 7 consultations process. Both NY and IN have active programmatic Safe Harbor Programs for KBBs.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	1.5	Develop recovery implementation strategies to promote recovery	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Private landowners	Other: Regulations	Internal Administrative	Recovery implementation strategies have been developed to encourage public participation in KBB recovery, e.g., via the programmataic Safe Harbor programs in IN and NY and the WI Statewide KBB HCP.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	2.11	Continue to develop and refine protocols/guidelines/selection criteria for reintroduction	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, Recovery Team, The Nature Conservancy, New Hampshire Department of Fish and Game, Toledo Zoo, Detroit Zoo	Management: Reintroduction	Internal Field Assistance	A Captive Rearing Subteam (includes FWS) was formed in 2007 to develop a Propagation Handbook for the KBB; the first edition of the handbook was completed in November of 2010.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	2.12	Incorporate research findings on captive propagation into protocols	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, New Hampshire Department of Fish and Game	Work type not yet selected	Graduate Student, Internal Field Assistance	On-going; in 2008 Steve Fuller (in his PhD dissertation) found better KBB larval growth on wild lupine grown in the shade. That concept is incorporated into the Propagation Handbook for the KBB completed in November 2010.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	2.211	Continue reintroduction in New Hampshire	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, The Nature Conservancy, New Hampshire Department of Fish and Game	Management: Reintroduction	Internal Field Assistance	Kbb reintroduction ongoing in Concord, NH lead by NH Fish & Game Dept. In 2010 about 2,600 adult Kbbbs were released into the metapopulation and the wild population increased from 2009-2010.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	2.212	Continue accelerated colonization in Minnesota	Discontinued			U.S. Fish and Wildlife Service, Ecological Services Division, Minnesota Department of Natural Resources	Management: Reintroduction	Internal Field Assistance	Population augmentation done twice at Whitewater with little success.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	2.213	Initiate translocation efforts in New York	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission, New Hampshire Department of Fish and Game	Management: Reintroduction	Internal Field Assistance	In 2008, 700 adult KBBs were successfully introduced to the Albany Pine Bush (APB). The NH Fish & Game Dept and Farnsworth Middle School raised KBBs to pupal stage for release at the APB. In 2009 the Albany Pine Bush population was augmented with about 558 adults, in 2010 with about 1,538 adults, and in 2011 with 1,715 adults.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	2.214	Continue reintroduction in Indiana	Complete	FY 2000 - FY 2004	FY 2014	U.S. Fish and Wildlife Service, Ecological Services Division, The Nature Conservancy, Indiana Dunes National Lakeshore, Indiana Department of Natural Resources	Management: Reintroduction	Internal Field Assistance, Species Expert	Funding mainly by TNC. In 2006 FWS Partners program provided \$6,900.00 to Shirely Heinze Land Trust for oak savanna restoration in West Gary RU. In 2008, habitat restoration work and Karner blue captive rearing increased the population at Ivanhoe Dune & Swale Nature Preserve. Work also on-going at Dupont Natural Area and Tolleston Ridges Nature Preserve. Population augmentation efforts continued in 2009 and 2010. In 2010, 269 adults, 21 larvae and 595 eggs were released at 3 sites in West Gary and at Howes Prairie, IDNL. In 2011, TNCC's augmentation program ceased; however captive reared KBBs are still being released at Indiana Dunes NP with the source of KBBS being excess captive reared KBBs from a USGS climate change research project.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	2.215	Implement translocation at other sites in RUs, if necessary	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division	Work type not yet selected	Labor type not yet selected	

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Karner blue butterfly (Lycaeides melissa samuelis)	2	2.31	Consider additional reintroduction efforts in Ohio	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, Ohio Department of Natural Resources, Toledo Zoo	Management: Reintroduction	Internal Field Assistance	The Toledo Zoo's program to reintroduce KBBs to the oak openings in nw Ohio (started in 1998) is on-going with captive reared KBBs released annually. In 2010 as Kbbbs are occupying more sites (4 of 5), the population is considered increasing (no Kbbbs are no longer present at the first reintroduction site - Kitty Todd proper). IN 2010, 1,435 adults were released at 2 sites.
Karner blue butterfly (Lycaeides melissa samuelis)	2	2.32	Consider reintroductions at other sites in PRUs as need develops.	Ongoing Current	FY 2008		Toledo Zoo, Detroit Zoo	Management: Reintroduction	Internal Technical Assistance	Note: This Action added in 2010 - it was identified in the Stepdown Recovery Outline in the Final KBB Recovery Plan (2003) but was inadvertently not included in the Plan's Implementation Schedule. In 2008, Michigan DNR started reintroducing Kbbbs to the Petersburg State Game Area in southeast Michigan. In 2009, 2010, and 2011, 318, 503, and 589 KBBs were released respectively. In 2009 -2011 wild Kbbbs were observed on the site. The work is being done by the Detroit Zoo with help from the Toledo Zoo. The KBB Recovery Plan (2003) was updated to include this new poential RU on 2/25/2011.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	3.1	Continue development of Karner blue Forest Management Guidelines	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, Private landowners, Wisconsin Department of Natural Resources	Management: Habitat Maintenance and Manipulation	Internal Technical Assistance	Forest guidelines developed by Cynthia Lane currently exist. In 2007 the WI KBB Statewide HCP forest guidelines were modified slightly to allow forest cutting in occupied KBB habitat any time of the year, with precautions to protect lupine areas. Guidelines for promoting a Kbb habitat shifting mosaic on forest lands are being developed by the WDNR HCP partnership.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	3.2	Develop guidelines for protection of Karner blues& fom biocides	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Forest Service, Department of Agriculture, Trade and Consumer Protection (Wisconsin)	Other: Regulations	Internal Field Assistance	WI KBB Statewide HCP pesticide guidelines currently exist and are periodically updated. S7 consultations between the USFWS and USFS on their gypsy moth control program is conducted in a manner to avoid/minimize impacts to the Kbbbs from use of Bt, a bacterial insecticide.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	3.3	Continue development of Karner blue management guidelines	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources	Management: General	Internal Field Assistance	The Intra-Service S7 BO for KBB S10 Permits and Grants completed in 2005, includes an appendix of updated wildlife management guidelines for KBBs; guidelines continue to evolve through FWS coordination with the Wisconsin DNR on implementation of the Wisconsin KBB Statewide HCP and with other states working on KBB management issues.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	3.4	Continue development of standardized monitoring protocols for the Karner blue	Ongoing Current	FY 2005		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, Recovery Team	Management: Population Monitoring	Internal Technical Assistance	Clarify methods for extrapolation of transect counts to population counts and for monitoring LPs, (refer also to Task 5.24) - P1. In 2005 a KBB Monitoring Subteam began working on KBB monitoring guidance; a workshop on Distance monitoring taught by USGS was held Sept. 2006 at Indiana Dunes Environmental Center. A second USGS workshop was held in WI in 2007. In 2008, USGS continued to provide technical assistance on Distance monitoring to the WI DNR and finalized "A guide to the use of distance sampling to estimate abundance of Karner blue butterflies (Ralp Grundel 2008). In 2009 a USGS Distance monitoring workshop was held in Pestigo, WI for WI and MI recovery partners. During 2010 USGS continues to assist with recovery monitoring questions.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	4.1	Continue to develop outreach material on Karner blue life history and conservation	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, American Association of Zoological Parks and Aquariums, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, Michigan Department of Natural Resources, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), Concord Pine Barrens Interagency Team (TNC, USFWS, NH Natural Heritage Inventory, and NHDFFG), Department of Agriculture, Trade and Consumer Protection (Wisconsin), Indiana Dunes National Lakeshore, Local Governments, Michigan Natural Features Inventory, New Hampshire Department of Fish and Game, Ohio Department of Natural Resources, Private landowners, Wisconsin Department of Natural Resources, Toledo Zoo, Roger Williams Park Zoo - RI	Work type not yet selected	Internal Technical Assistance	The USFWS as well as its partners (e.g., states and Federal Agencies) have produced KBB outreach information. The WI Statewide HCP has produced significant outreach materials as well. The KBB is one of the Midwest FWS website "featured species."
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	4.2	Inform local governments of Karner blue butterfly recovery units	Ongoing Current	FY 2000 - FY 2004		Wisconsin Department of Natural Resources	Management: Planning	Internal Technical Assistance	On-going as needed. In 2010 Wood County Highway Department became a partner to the WI Statewide KBB HCP.

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Karner blue butterfly (Lycaeides melissa samuelis)	3	4.3	Encourage private landowners to conserve the Karner blue butterfly.	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, Michigan Department of Natural Resources, Private landowners, Wisconsin Department of Natural Resources	Other	Internal Technical Assistance	The FWS's "Partners for F&W Program," as well as The Nature Conservancy, and various states through grant programs (e.g., LIP) are accomplishing this on-going task. The ITP issued for the WI KBB Statewide HCP is providing a streamlined regulatory approach to cover take of KBBs on private lands.
Karner blue butterfly (Lycaeides melissa samuelis)	3	4.4	Assess the needs, goals, and outcomes for public outreach	Not Started			To be determined	Other	Labor type not yet selected	
Karner blue butterfly (Lycaeides melissa samuelis)	1	5.11	Research Habitat management relative to Karner blue butterfly	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, U.S. Forest Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Universities	Research: Management Techniques	Internal Field Assistance	Priority on research aimed for application in NH, NY, and MN. Habitat management research has been done at Necedah NWR, Fort McCoy in WI, and TNC in MI. In 2008 Huron-Manistee NF (MI) started a habitat management research program to assess best methods to restore KBB habitat via mechanical management tools. In 2010 the Albany Pine Bush Commission in NY continues research on restoring oak savanna habitat. Various habitat related research has been conducted by University researches over the past several years.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.12	Research - Lupine propagation	Ongoing Not Current			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Albany Pine Bush Preserve Commission, New Hampshire Department of Fish and Game, Private landowners, Universities, Natural Resources Conservation Service	Work type not yet selected	Graduate Student	Priority in NY and NH. PhD Dissertation by Steve Fuller (SUNY-Syracuse 2008) included research on lupine and Kbbs; other researchers involved in lupine studies as well.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.13	Research - Karner blue butterfly translocation methods	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Minnesota Department of Natural Resources, New Hampshire Department of Fish and Game, Ohio Department of Natural Resources, Universities	Research: Propagation	Internal Technical Assistance	Captive rearing programs have identified translocation methods. In 2008 a KBB Captive Rearing Subteam was formed that is consolidating information on captive rearing techniques. In 2008 Steve Fuller completed a PhD on Karners which includes information on diet relative to female fecundity.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.14	Research - Alternative habitat restoration methods	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, Michigan Department of Natural Resources, The Nature Conservancy, Minnesota Department of Natural Resources, Michigan Natural Features Inventory, New Hampshire Department of Fish and Game, Private landowners, Wisconsin Department of Natural Resources	Work type not yet selected	Internal Technical Assistance	Especially needed in NH, NY, and MN. In 2008, Huron-Manistee NF (MI) started habitat management research. The Albany Pine Bush (2010) is researching management techniques to control oak shrubs.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.15	Research - Remote sensing	Complete	FY 2000 - FY 2004	FY 2000 - FY 2004	U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, U.S. Forest Service	Work type not yet selected	Labor type not yet selected	To identify lupine patches, especially on larger landscapes such as Muskegon and Newago RUs (MI). UW-Stevens Point completed a report on the use of multi-spectrum satellite imagery to detect lupine in 2002.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.16	Research - Glacial Lake Albany population decline	Ongoing Not Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Universities	Work type not yet selected	Labor type not yet selected	TNC is improving habitat at Albany Pine Bush (APB) and monitoring the results of that work. In 2008 TNC started an augmentation program that successfully released 700 Karners to the APB.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	5.21	Research - Karner blue dispersal	Ongoing Not Current	FY 2006		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Michigan Natural Features Inventory, Universities, Wisconsin Department of Natural Resources	Research: Other Information	Labor type not yet selected	Especially in forested and urban/suburban habitats. Necedah NWR has completed KBB dispersal research. Other studies have been done in various states e.g., NY, and MI. Dunn completed a study on dispersal of Kbb in the Huron Manistee NF in 2006.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	5.22	Research Dispersal corridors and barriers	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, The Nature Conservancy, Universities, Wisconsin Department of Natural Resources	Work type not yet selected	Labor type not yet selected	

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	5.23	Research Ecosystem Management	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), Minnesota Department of Natural Resources, Michigan Natural Features Inventory, Wisconsin Department of Natural Resources	Management: Habitat Maintenance and Manipulation	Internal Technical Assistance	Huron-Manistee began forest management research in 2008 to determine best mechanical management methods to restore Kbb habitat.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	5.24	Research - Karner blue butterfly monitoring	Ongoing Current	FY 2006		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), Michigan Natural Features Inventory, Universities, Wisconsin Department of Natural Resources	Work type not yet selected	Labor type not yet selected	If needed, further research costeffective and statistically reliable monitoring methods for LPs (refer also to Task 3.4). USFWS is working with the USGS on the use of Distance sampling to streamline monitoring work.

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	5.25	Research - Forest management research	Ongoing Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, U.S. Forest Service, Michigan Natural Features Inventory, Private landowners, Universities, Wisconsin Department of Natural Resources	Management: Habitat Maintenance and Manipulation	Internal Technical Assistance	Huron-Manistee NF began a forest management research project in 2008 which is on-going.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	2	5.26	Research - Highly dispersed metapopulations	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Federal Aviation Administration, U.S. Fish and Wildlife Service, The Nature Conservancy, National Wildlife Refuges (Necedah or Great Bay NWR), City of Concord, New Hampshire, New Hampshire Department of Fish and Game	Work type not yet selected	Labor type not yet selected	Minimal cost to update existing plans

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	5.31	Research - Ecology of local populations	Ongoing Current			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, Michigan Department of Natural Resources, The Nature Conservancy, Albany Pine Bush Preserve Commission, Indiana Dunes National Lakeshore, Minnesota Department of Natural Resources, Michigan Natural Features Inventory, Private landowners, Universities, Wisconsin Department of Natural Resources, Wilton Wildlife Preserve and Park	Work type not yet selected	Labor type not yet selected	Should be distributed over several projects. Ecological studies included in PhD dissertation by Steve Fuller (SUNY 2008). Tracy Feldman (UW-Stevens Point) started research related to ants/Kbb in 2010 in WI.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	5.32	Research - Effects of human activities	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Michigan Natural Features Inventory, Wisconsin Department of Natural Resources	Work type not yet selected	Labor type not yet selected	Focus on rights-of-way and developed areas

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	5.33	Research - Browse thresholds	Ongoing Current	FY 2010	FY 2014	U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, U.S. Forest Service, Albany Pine Bush Preserve Commission, Department of Defense (Fort McCoy and/or Air National Guard Hardwood Range), Minnesota Department of Natural Resources	Research: Predation	Contract	A deer browse study was started in 2010 by USGS and the Univ of Notre Dame and is ongoing.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	5.34	Research -Re-establishment of lupine	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Minnesota Department of Natural Resources, Private landowners	Work type not yet selected	Labor type not yet selected	Establishment after canopy is opened in areas where lupine is limiting
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	5.35	Research - Population structure	Ongoing Not Current	FY 2008		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, The Nature Conservancy, Universities	Work type not yet selected	Contract, Graduate Student	Steve Fuller completed his PhD dissertation on the Population Dynamics of the KBB in 2008. His work was done at the Albany Pine Bush (NY) Kbb metapopulation area which has highly fragmented habitat.

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Karner blue butterfly (Lycaeides melissa samuelis)	3	5.36	Taxonomy research	Ongoing Current	FY 1995 - FY 1999		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, To be determined	Research: Genetics	Labor type not yet selected	Studies have been done that support the current taxonomy of the KBB by Chris Nice et.al. In 2010 the USGS started research to assess the genetics of the Kbb range-wide as part of a study to assess the impacts of climate change on the Kbb.
Karner blue butterfly (Lycaeides melissa samuelis)	3	5.37	Develop monitoring protocols using non-adult life stages	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Geological Survey, Biological Resources Division, U.S. Fish and Wildlife Service, New Hampshire Department of Fish and Game	Work type not yet selected	Labor type not yet selected	
Karner blue butterfly (Lycaeides melissa samuelis)	3	5.38	Research the effects of atmospheric nitrogen on lupine	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, To be determined	Work type not yet selected	Labor type not yet selected	
Karner blue butterfly (Lycaeides melissa samuelis)	3	6.1	Develop a clearinghouse for Karner blue butterfly data and information	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service	Other	Internal Technical Assistance	Review annually. The FWS's GBFO is maintaining a KBB library with the help of USGS.
Karner blue butterfly (Lycaeides melissa samuelis)	3	6.2	Conduct Recovery Team meetings	Ongoing Current	FY 2000 - FY 2004	FY 2000 - FY 2004	U.S. Fish and Wildlife Service, Ecological Services Division, American Association of Zoological Parks and Aquariums, U.S. Fish and Wildlife Service, Recovery Team	Work type not yet selected	Labor type not yet selected	Hold Recovery Team Meetings every 2-3 years as needed. The last full team meeting was in 2004. Since 2007, the KBB Recovery Team "meets" via conference calls twice a year (fall and spring).

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Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	1	6.3	Revise plan as appropriate	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Recovery Team	Acquisition: General	Labor type not yet selected	Re-evaluate recovery goals for Wisconsin P1.
Karner blue butterfly (<i>Lycaeides melissa samuelis</i>)	3	6.4	Hold periodic meetings to promote recovery and information sharing	Ongoing Current	FY 2000 - FY 2004		Recovery Team	Other: Information and Education	Labor type not yet selected	The last full team meeting was held in 2004. In Nov. 2007, the KBB Recovery Team started having conference calls every 6 months, which have continued through 2010. All states have active KBB working groups.